Counting grids

The types of counting chambers differ in counting grids and the depths of the chambers. Orthogonal lines form grids which become visible by magnifying them with a microscope. The grid of a counting chamber is engraved into the surface of its base.

Neubauer-improved

Nowadays the Neubauer-improved counting chambers has become the most popular one.

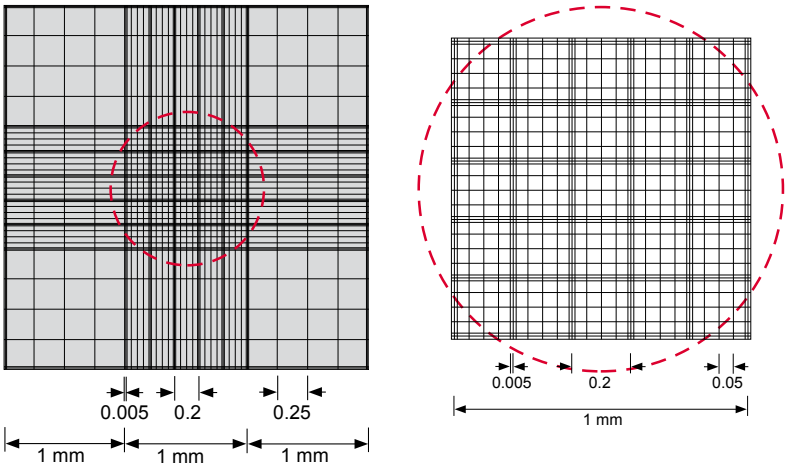
Its standard depth is 0.1 mm. The grid consists of 3 x 3 large squares with areas of 1 mm² each. The large square in the center is subdivided into 5 x 5 group squares with edges of each 0.2 mm length and areas of 0.04 mm². These group squares are again subdivided into sixteen small squares of an area of each 0.05 mm x 0.05 mm = 0.0025 mm².

The lines limiting the large squares and the group squares are threefold with the central line as the actual dimension lines. The inner and outer auxiliary lines facilitate counting. They assist determining whether cells near or on the border lines are to be counted as within the area or omitted as outside of the counting area.

As the counting chamber comes with differently large squares it can be used for counting different types of cells. E.g. leucocytes are counted in the 4 large squares at the corners of the grid and normally for counting erythrocytes at least 5 group squares are used.

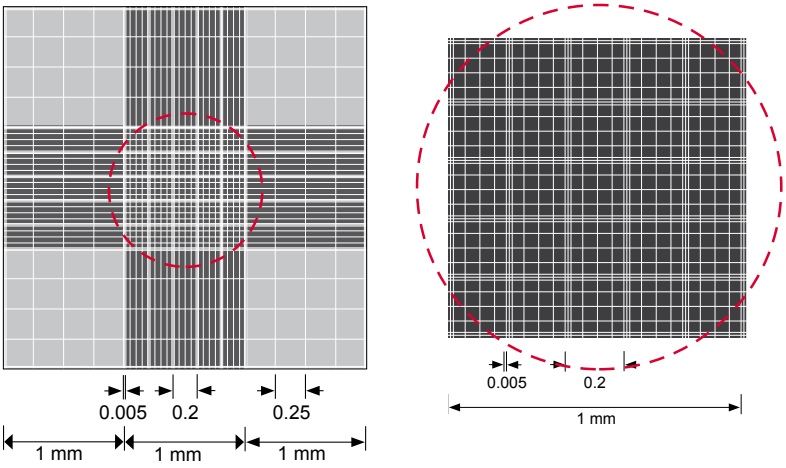
Neubauer-improved dark line

Dark line:
The grids of dark line counting chambers are engraved into the glass surface of the base of the chamber. When looking through a microscope these lines appear to be dark.



Depth = 0.1 mm	□	mm x mm / 1 □	mm² / 1 □	Vol. [µl]
Total net ruling	1	3 x 3	9	0.9
Large squares per grid	9	1 x 1	1	0.1
Group squares per large square	25	0.2 x 0.2	0.04	0.004
Small squares per group square	16	0.05 x 0.05	0.0025	0.00025

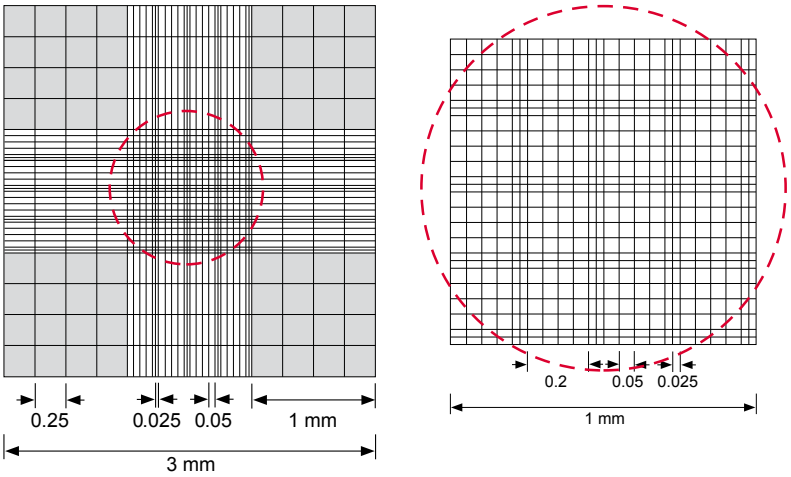
Neubauer-improved bright line



Bright line:
The grids of counting chambers with bright lines are engraved into a thin, vapour-deposited metal film. The bright lines contrast well with the darker, metallic background which facilitates the evaluation.

Depth = 0.1 mm	□	mm x mm / 1 □	mm² / 1 □	Vol. [µl]
Total net ruling	1	3 x 3	9	0.9
Large squares per grid	9	1 x 1	1	0.1
Group squares per large square	25	0.2 x 0.2	0.04	0.004
Small squares per group square	16	0.05 x 0.05	0.0025	0.00025

Neubauer



The depth of the Neubauer chamber is 0.1 mm.

Its net ruling covers 3 mm x 3 mm in total and consists of 9 large squares of 1 mm².

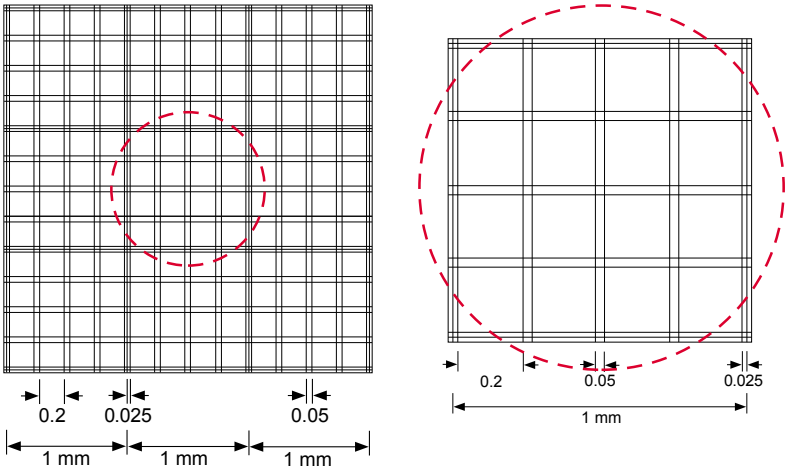
The central large square is subdivided in 4 x 4 group squares of 0.2 x 0.2 mm². Triple lines in a distance of 0.025 mm separate the group squares from each other. Each group square is subdivided in 16 small squares of 0.05 mm side length.

Depth = 0.1 mm	□	mm x mm / 1 □	mm² / 1 □	mm³ = µl
Total net ruling	1	3 x 3	9	0.9
Large squares per grid	9	1 x 1	1	0.1
Group squares per large square	16	0.2 x 0.2	0.04	0.004
Small squares per group square	16	0.05 x 0.05	0.0025	0.00025

Buerker

The depth of the Buerker counting chamber is 0.1 mm. Its counting grid covers 9 mm² and is subdivided by triple lines into 9 large squares. The distances between the middle lines are 1 mm.

Each of these large squares is subdivided into 16 small squares by double lines with a space of 0.05 mm between them. The inner lines of these small squares form areas of 0.2 x 0.2 mm².
The crossings of the double lines form small squares of 0.05 x 0.05 mm². These squares are suitable for counting thrombocytes and erythrocytes.



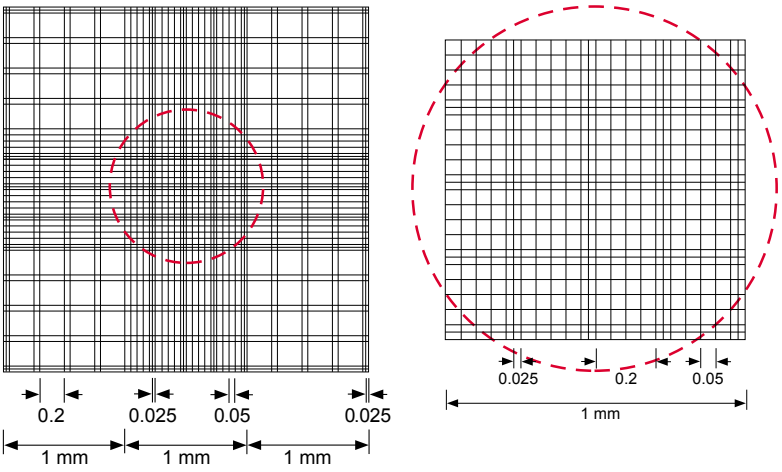
Depth = 0,1 mm	□	mm x mm / 1 □	mm² / 1 □	mm³ = µl
Total net ruling	1	3 x 3	9	0.9
Large squares per grid	9	1 x 1	1	0.1
Small squares per Large square	16	0.2 x 0.2	0.04	0.004

Buerker-Tuerk

The depth of the Buerker-Tuerk chamber is 0.1 mm. The counting grid covers 9 mm² and is subdivided by triple lines into 9 large squares.

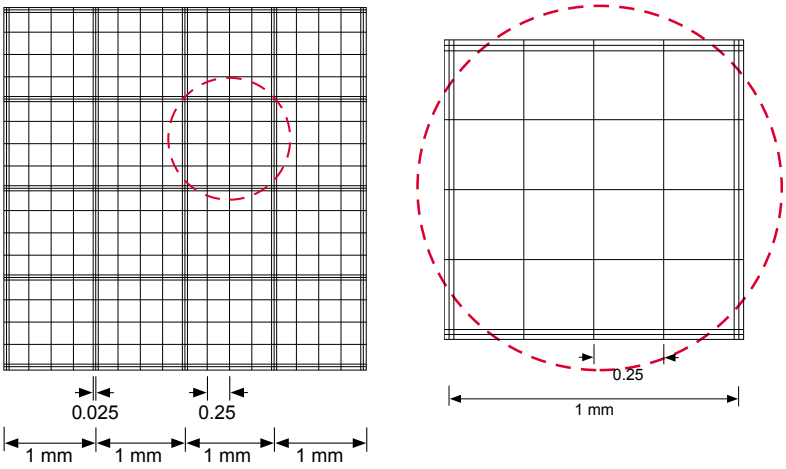
Each of these large squares is subdivided into 16 small squares by double lines with a space of 0.05 mm between them. The inner lines of these small squares form areas of 0.2 x 0.2 mm².

Additionally to the Buerker chamber the 16 small square of the central large square are subdivided again into 16 squares with 0.05 mm length of the edge and an area of 0.0025 mm².



Depth = 0.1 mm	□	mm x mm / 1 □	mm² / 1 □	mm³ = µl
Total net ruling	1	3 x 3	9	0.9
Large squares per grid	9	1 x 1	1	0.1
Small squares per large square	16	0.2 x 0.2	0.04	0.004
Smallest squares per small square	16	0.05 x 0.05	0.0025	0.00025

Fuchs-Rosenthal

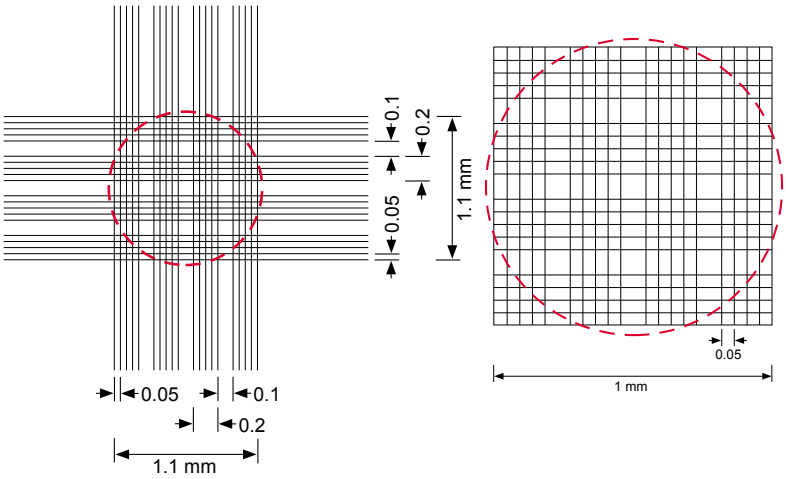


The depth of the Fuchs-Rosenthal counting chamber is 0.2 mm. In total the grid covers 16 mm² and contains 16 large squares of each 1 mm length of the edge. These large squares are separated by triple lines with a space of 0.01 mm between each other. The distance between the center lines is 1 mm. All 16 large squares are subdivided into 16 small squares of a side length of 0.25 mm.

Due to the large counting grid and a depth of 0.2 mm the total volume amounts to 3.2 µl. This counting chamber is, therefore, preferably used for counting cell suspensions with relatively few cells, e.g. cerebro-spinal fluid.

Depth = 0.1 mm	□	mm x mm / 1 □	mm² / 1 □	mm³ = µl
Total net ruling	1	4 x 4	16	3.2
Large squares per grid	16	1 x 1	1	0.2
Small squares per large square	16	0.25 x 0.25	0.0625	0.0125

Thoma new



The depth of the Thoma new counting chamber is 0.1 mm. The grid covers an area of 1.1 x 1.1 mm². It is subdivided in 16 group squares with a side length of 0.2 mm.

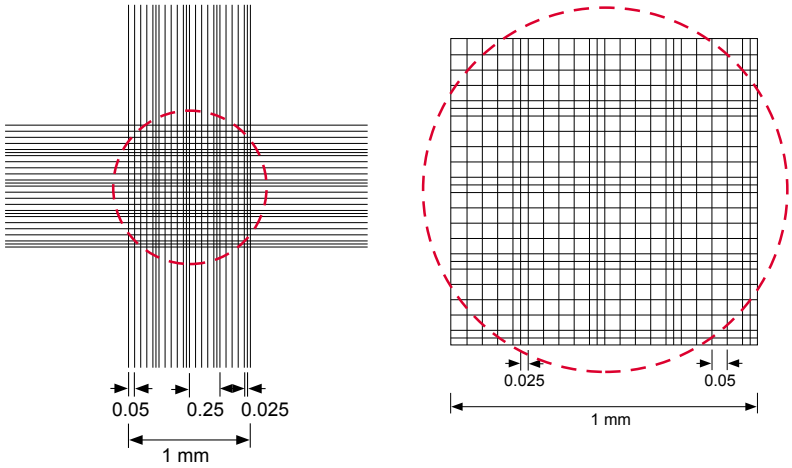
These group squares have a distance of 0.1 mm to the adjacent group squares. They are subdivided into 16 small squares.

Thoma

The depth of the Thoma counting chamber is 0.1 mm The grid covers an area of 1 x 1 mm².

It is subdivided into group squares with a side length of 0.2 mm (like the Neubauer system).

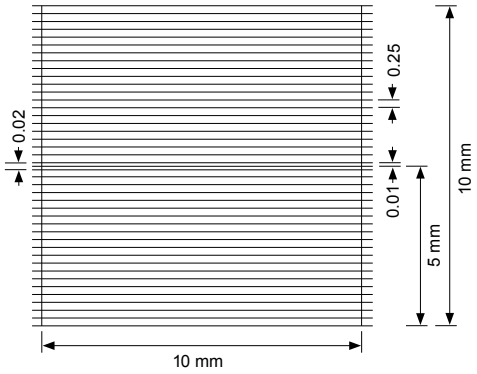
The group squares are subdivided into 16 small squares of an area of 0.05 mm x 0.05 mm = 0.0025 mm².



Nageotte

The depth of the Nageotte counting chamber is 0.5 mm.

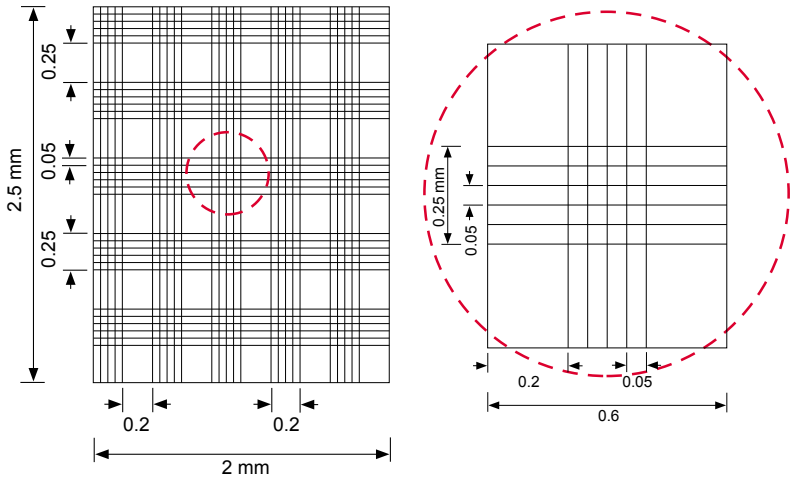
The square area of 100 mm² is divided into 40 rectangles each with an area of 0.25 x 10 = 2.5 mm². This counting chamber is mainly used for counting cells in cerebro-spinal fluid or for counting nematodes.



Malassez

The depth of the Malassez counting chamber is 0.2 mm The counting grid covers 2 x 2.5 mm². The large rectangles have an area of 0.25 x 0.20 = 0.05 mm². Each of them is subdivided into 20 small squares with an area of each 0.05 mm x 0.05 mm = 0.0025 mm².

This counting chamber is used for counting cells in liquor (cerebro-spinal fluid) and for counting nematodes for example.




Neubauer
improved
bright-line
MARIENFELD
GERMANY

Counting chambers

Marienfeld Superior counting chambers are precise measuring instruments to determine the number of particles in liquids.

- made of special optical glass
- in compliance with DIN ISO 12 847
- individually tested according to the German Calibration Ordinance
- planarity and tolerances are strictly observed
- tolerance of depth of chamber max. 2 %
- our counting chambers for investigations of cell suspensions are equipped with 2 sets of grids. In-vitro diagnostic (IVD) applications generally require duplicate determinations. Double counting grids = double check possibility.
- a cover glass with a thickness of 0.4 mm is placed on top of both external stages of the counting chamber to limit the volume over the counting grids 2 haemacytometer cover glasses with thickness 0.4 mm are supplied with each counting chamber. For spare cover glasses please see page 19.
- in general, we recommend haemacytometer cover glasses 20 x 26 mm. Counting chambers Fuchs-Rosenthal require cover glasses 24 x 24 mm and counting chambers Nageotte require cover glasses 22 x 30 mm or 30 x 30 mm. Thinner cover slips should not be used as they bend because of the capillary.
- individually packed in transparent plastic box, 10 pcs. in a carton
- counting grids are engraved into two ground and polished surfaces on the central stage (= chamber bottom). This central stage is located between two elevated also ground and polished stages.

  - **Dark line:**
    Standard counting chambers have counting grids which are engraved into the chamber bottom. Under the microscope the lines of the counting grid appear dark.

  - **Bright line:**
    Bright lined counting chambers have counting grids which are structured into a very thin, transparent metal coating. The bright lines contrast well with the dark metallic background and this facilitates evaluating cell suspensions.

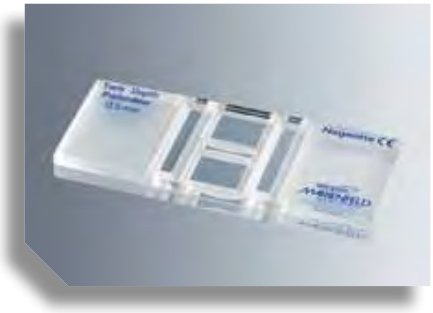
Counting chambers with V-slash

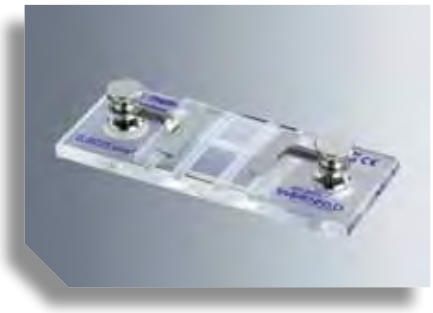
Counting chambers with V-slash at the exterior sides of the chamber bottom offer various advantages:

- the V-slash facilitates the feeding of the capillary gap between chamber bottom and haemacytometer cover glass
- the risk of overflow is reduced

Cat. No.		Depth of chamber	Unit
Approved for in-vitro diagnostic (IVD) applications according to IVD directive 98/79/EC, with CE-mark			
06 500 10	Neubauer-improved, dark line	0.1 mm	1
06 500 30	Neubauer-improved, bright line	0.1 mm	1

Counting chambers





Cat. No.		Depth of chamber	Unit
Approved for in-vitro diagnostic (IVD) applications according to IVD directive 98/79/EC, with CE-mark			
Dark line			
06 400 10	Neubauer-improved	0.1 mm	1
06 401 10	Neubauer	0.1 mm	1
06 402 10	Buerker	0.1 mm	1
06 403 10	Buerker-Tuerk	0.1 mm	1
06 404 10	Fuchs-Rosenthal	0.2 mm	1
06 405 10	Nageotte	0.5 mm	1
06 406 10	Malassez	0.2 mm	1
06 407 10	Thoma	0.1 mm	1
06 408 10	Thoma new	0.1 mm	1
Bright line			
06 400 30	Neubauer-improved	0.1 mm	1
06 401 30	Neubauer	0.1 mm	1
06 402 30	Buerker	0.1 mm	1
06 403 30	Buerker-Tuerk	0.1 mm	1
06 404 30	Fuchs-Rosenthal	0.2 mm	1
06 405 30	Nageotte	0.5 mm	1
06 406 30	Malassez	0.2 mm	1
06 407 30	Thoma	0.1 mm	1
06 408 30	Thoma new	0.1 mm	1

Cat. No.		Depth of chamber	Unit
Without CE-mark, only for sale and application outside EC			
Dark line			
06 100 10	Neubauer-improved	0.1 mm	1
06 101 10	Neubauer	0.1 mm	1
06 102 10	Buerker	0.1 mm	1
06 103 10	Buerker-Tuerk	0.1 mm	1
06 104 10	Fuchs-Rosenthal	0.2 mm	1
06 105 10	Nageotte	0.5 mm	1
06 106 10	Malassez	0.2 mm	1
06 107 10	Thoma	0.1 mm	1
Bright line			
06 100 30	Neubauer-improved	0.1 mm	1
06 101 30	Neubauer	0.1 mm	1
06 102 30	Buerker	0.1 mm	1
06 103 30	Buerker-Tuerk	0.1 mm	1
06 104 30	Fuchs-Rosenthal	0.2 mm	1
xx xxx x1	For counting chambers with 2 clamps please amend Cat. No. accordingly		

Information on the use of counting chambers can be downloaded from our website.

▶ This arrow indicates products that are usually available on short notice.

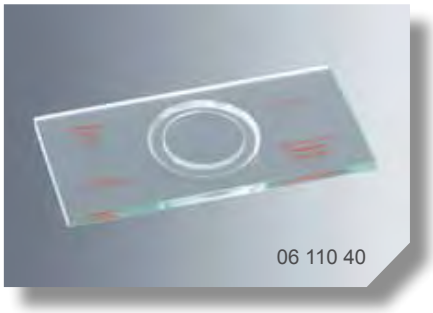
Counting chambers with special depth (Petroff)

Cat. No.		Special depth (Tol. ± 1 µm)	Unit
Approved for in-vitro diagnostic (IVD) applications according to IVD directive 98/79/EC, with CE-mark			
Dark line			
06 420 10	Neubauer-improved	0.01 mm	1
06 421 10	Neubauer-improved	0.02 mm	1

Other types and special depths are available on request (smallest possible depth = 0.01 mm). Minimum order quantity: 10 pieces

06 109 40


03 340 02


06 110 40


03 340 01

Counting chambers Howard

- for the investigation of fruit juices
- depth of chamber: approx. 0.1 mm

Cat. No.		Unit
06 109 40	counting chamber without cover glass with 2 counting lines approx. 1402 µm apart diameter of ring: approx. 18 mm internal, approx. 22 mm external	1
03 330 01	cover glass approx. 25 x 40 x 0.4 mm, ground edges without mask	1
03 340 02	cover glass approx. 25 x 40 x 0.4 mm, ground edges with chromium mask to facilitate counting with 5 x 5 wells each approx. 1.382 mm diameter	1

Cat. No.		Unit
06 110 40	counting chamber without cover glass without counting lines diameter of ring: approx. 20 mm internal, approx. 26 mm external	1
03 340 01	cover glass approx. 33 x 33 x 1 mm, ground edges with blue counting mask approx. 15 x 15 mm with 5 x 5 wells each approx. 1.382 mm diameter	1
03 340 02	cover glass approx. 25 x 40 x 0.4 mm, ground edges with chromium mask to facilitate counting with 5 x 5 wells each approx. 1.382 mm diameter	1

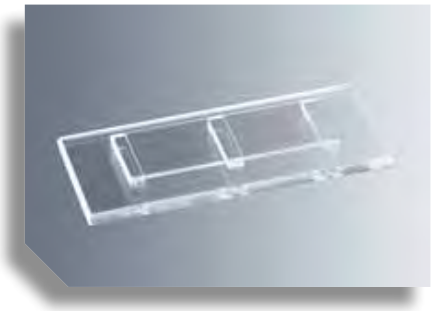
▶ This arrow indicates products that are usually available on short notice.

Counting chambers McMaster with 3 grids

- for counting worm eggs
- suitable for liquid media
- dimensions: approx. 127 x 26 mm
- depth: approx. 1.5 mm
- separate cover glass with 3 counting grids approx. 10 x 10 mm (divided into 10 parts)
- with 1 pair of clamps to fix the cover glass
- ground edges and rounded corners

Cat. No.		Unit
06 111 41	chamber complete	1
03 350 01	spare cover glass approx. 80 x 18 mm	1

Counting chambers McMaster with 2 grids



- for counting worm eggs
- suitable for solid media
- dimensions: approx. 75 x 32 mm
- the cover glass with 2 counting grids approx. 10 x 10 mm (divided into 10 parts) on 3 supports affixed
- distance between bottom plate and cover glass: approx. 1.5 mm

Cat. No.		Unit
06 112 40	chamber complete	1

Counting chambers Sedgewick Rafter

Counting chambers acc. to Sedgewick Rafter are intended for counting of particles and microorganisms in water or other transparent liquids.

- the cell of 50 x 20 x 1 mm (= 1 cm^3) is ruled in a 1 mm grid subdividing 1 ml in 1000 µl
- supplied with cover glass approx. 60 x 30 x 1 mm

Cat. No.		Unit
06 113 00	precision type made of glass with chromium deposited for phase contrast use with ground and chamfered edges	1
06 114 00	single type made of plastic	1
03 360 00	spare cover glass approx. 60 x 30 x 1 mm	1

▶ This arrow indicates products that are usually available on short notice.

When pipetting, please note the safety regulations. Pipetting by mouth is dangerous. We disclaim any responsibility.

Haemacytometers

Complete set in a plastic case consisting of:

- 1 Marienfeld Superior counting chamber with double counting grid
- 2 haemacytometer cover glasses with thickness 0.4 mm
- each 1 blood diluting pipette Thoma red and white
- 2 silicone tubings with approx. 16 cm length
- each 1 plastic mouthpiece red and white
- without CE-mark, only for sale and application outside EC

Cat. No.		Depth of chamber	Unit
Dark line			
06 300 10	Neubauer-improved	0.1 mm	1
06 304 10	Fuchs-Rosenthal	0.2 mm	1
Bright line			
06 300 30	Neubauer-improved	0.1 mm	1
06 304 30	Fuchs-Rosenthal	0.2 mm	1

For other types please send us your enquiry.

Cellcounter

The electronic blood counter is designed for counting blood cells, but is also appropriate for counting any other particles.

- with digital display
- with 6 functional keys, 15 individually nameable counting keys and 4 different counting programmes. One of these programmes is freely configurable and programmable by the user. This enables the operator to program any kind of counting or analysis by himself.
- percentual or real figures can be obtained
- counting range up to max. 1000
- dimensions: 210 x 190 x 25 mm
- individually packed in a carton
- supplied with detailed operating instruction
- with CE-mark

Cat. No.	Type	Electric mains	Unit
71 400 02	2001	230 V / 50 to 60 cps	1
71 100 02	2001	115 V / 50 to 60 cps	1
For connection to PCs, including software and plug			
71 400 03	2001 PC	230 V / 50 to 60 cps	1
71 100 03	2001 PC	115 V / 50 to 60 cps	1

▶ This arrow indicates products that are usually available on short notice.